

IN THE CLAIMS:

1-42 Canceled

43. (Currently Amended) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said functional group forms said thermo-reversible cross-linked structure which is covalently bonded at a temperature for use as a molded article and cleaved at temperatures over 120°C and equal to or lower than the molding temperature, and said covalent bond is ~~at least one of a Diels-Alder type and carboxyl-alkenyl-oxo type.~~

44. (Previously Presented) The biodegradable resin according to Claim 43, wherein said functional group is at least one group selected from the group consisting of a alkenyl group and group having a conjugated double bond.

45. (Canceled)

46. (Canceled)

47. (Currently Amended) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin includes polyamino acids having at least one Diels-Alder type functional group selected from the group consisting of an alkenyl group and a group having a conjugated double bond ~~a hydroxyl group, carboxyl group and amino group, and modified bodies of the polyamino acids.~~

48. (Currently Amended) A biodegradable resin having a functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin includes polysaccharides having at least one Diels-Alder type functional group selected from the group consisting of an alkenyl group and a group having a conjugated double bond ~~a hydroxyl group, carboxyl group and amino group, and modified bodies of the polysaccharides.~~

49. (Currently Amended) A biodegradable resin having a Diels-Alder type functional group selected from the group consisting of an alkenyl group and a group having a conjugated double bond ~~forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin is polylactic acid or modified body of the polylactic acid.~~

50. (Currently Amended) A biodegradable resin having a Diels-Alder type functional group selected from the group consisting of an alkenyl group and a group having a conjugated double bond ~~forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein said biodegradable resin is polybutylene succinate or modified body of the polybutylene succinate.~~

51. (Currently Amended) The biodegradable resin according to Claim 43, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

52. (Previously Presented) The biodegradable resin according to Claim 43, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

53. (Previously Presented) The biodegradable resin according to Claim 43, wherein one or more of said functional groups are present at the same site, at least one of the end and side chain of said biodegradable resin.

54. (Previously Presented) The biodegradable resin according to Claim 43, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

55. (Previously Presented) The biodegradable resin according to Claim 47, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

56. (Previously Presented). The biodegradable resin according to Claim 47, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

57. (Previously Presented) The biodegradable resin according to Claim 47, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

58. (Previously Presented) The biodegradable resin according to Claim 47, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

59. (Previously Presented) The biodegradable resin according to Claim 48, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

60. (Previously Presented) The biodegradable resin according to Claim 48, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

61. (Previously Presented) The biodegradable resin according to Claim 48, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

62. (Previously Presented) The biodegradable resin according to Claim 48, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

63. (Previously Presented). The biodegradable resin according to Claim 49, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.000 1 to 1.

64. (Previously Presented) The biodegradable resin according to Claim 49, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

65. (Previously Presented) The biodegradable resin according to Claim 49, wherein one or more of said functional groups are present at the same site, at least one of the end and side chain of said biodegradable resin.

66. (Previously Presented) The biodegradable resin according to Claim 49, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

67. (Previously Presented) The biodegradable resin according to Claim 58, wherein said biodegradable resin has a three-dimensional cross-linked structure, and the cross-linked density of the three-dimensional cross-linked structure is 0.0001 to 1.

68. (Previously Presented) The biodegradable resin according to Claim 50, wherein the main chain of said biodegradable resin has at least one of a linear structure and branched structure.

69. (Previously Presented) The biodegradable resin according to Claim 50, wherein one or more of said functional groups are present at the same site, at at least one of the end and side chain of said biodegradable resin.

70. (Previously Presented) The biodegradable resin according to Claim 50, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.

71. (Currently Amended) A biodegradable resin having a Diels-Alder type functional group selected from the group consisting of an alkenyl group and a group having a conjugated double bond ~~forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, wherein an electrostatically bondable and thermo-reversible cross-linked structure is used together.~~

72. (Canceled)

73. (Canceled)

74. (Previously Presented) The biodegradable resin according to Claim [[7]] 71, wherein said functional group forms said thermo-reversible cross-linked structure which is

covalently bonded at a temperature for use as a molded article and cleaved at temperatures over 120°C and equal to or lower than the molding temperature.

75. (Canceled)

76. (Canceled)

77. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 43.

78. (Previously Presented) The biodegradable resin composition according to Claim 77, wherein said first functional group and said second functional group are identical.

79. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 47.

80. (Previously Presented) The biodegradable resin composition according to Claim 79, wherein said first functional group and said second functional group are identical.

81. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 48.

82. (Previously Presented) The biodegradable resin composition according to Claim 81, wherein said first functional group and said second functional group are identical.

83. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 49.

84. (Previously Presented) The biodegradable resin composition according to Claim 83, wherein said first functional group and said second functional group are identical.

85. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 50.

86. (Previously Presented) The biodegradable resin composition according to Claim 85, wherein said first functional group and said second functional group are identical.

87. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a second biodegradable resin having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 71.

88. (Previously Presented) The biodegradable resin composition according to Claim 87, wherein said first functional group and said second functional group are identical.

89. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating,

and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 43.

90. (Previously Presented) The biodegradable resin composition according to Claim 89, wherein said linker has two or more identical second functional groups.

91. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 47.

92. (Previously Presented) The biodegradable resin composition according to Claim 91, wherein said linker has two or more identical second functional groups.

93. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 48.

94. (Previously Presented) The biodegradable resin composition according to Claim 93, wherein said linker has two or more identical second functional groups.

95. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 49.

96. (Previously Presented) The biodegradable resin composition according to Claim 95, wherein said linker has two or more identical second functional groups.

97. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 50.

98. (Previously Presented) The biodegradable resin composition according to Claim 55, wherein said linker has two or more identical second functional groups.

99. (Previously Presented) A biodegradable resin composition comprising a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, and a linker having a second functional group forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 71.

100. (Previously Presented) The biodegradable resin composition according to Claim 99, wherein said linker has two or more identical second functional groups.

101. (Previously Presented) A biodegradable molded body comprising the biodegradable resin according to Claim 43.

102. (Previously Presented) A biodegradable molded body comprising the biodegradable resin according to Claim 47.

103. (Previously Presented) A biodegradable molded body comprising the biodegradable resin according to Claim 48.

104. (Previously Presented) A biodegradable molded body comprising the biodegradable resin according to Claim 49.

105. (Previously Presented) A biodegradable molded body comprising the biodegradable resin according to Claim 50.

106. (Previously Presented) A biodegradable molded body comprising the biodegradable resin according to Claim 71.

107. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 77.

108. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 79.

109. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 81.

110. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 83.

111. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 85.

112. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 87.

113. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 89.

114. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 91.

115. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 93.

116. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 95

117. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 97.

118. (Previously Presented) A biodegradable molded body comprising the biodegradable resin composition according to Claim 99.

119. (Previously Presented) A method of producing the biodegradable resin according to Claim 43,

comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

120. (Previously Presented) A method of producing the biodegradable resin according to Claim 47, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

121. (Previously Presented) A method of producing the biodegradable resin according to Claim 48, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

122. (Previously Presented) A method of producing the biodegradable resin according to Claim 49, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently

bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

123. (Previously Presented) A method of producing the biodegradable resin according to Claim 50, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

124. (Previously Presented) A method of producing the biodegradable resin according to Claim 71, comprising a step of reacting a cross-linking agent having a structure of the covalent bond of a first functional group and a second functional group, which is covalently bonded by cooling and cleaved by heating, and a third functional group, with a biodegradable resin material having a site reacting with said third functional group.

125. (Previously Presented) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 43.

126. (Currently Amended) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim [[5]] 47.

127. (Previously Presented) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 48.

128. (Previously Presented) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 49.

129. (Previously Presented) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 50.

130. (Previously Presented) A method of producing a biodegradable resin comprising a step of cross-linking a first biodegradable resin having a first functional group forming a thermo-reversible cross-linked structure which is covalently bonded by cooling and cleaved by heating, with a linker having two or more second functional groups forming a thermo-reversible cross-linked structure which is covalently bonded with said first functional group by cooling and cleaved by heating, wherein said first biodegradable resin is the biodegradable resin according to Claim 71.